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ABSTRACT

Evaluating a 1975 summer science workshop designed to help upgrade science teaching skills among Bureau of Indian Affairs personnel (administrators, teachers, and education specialists), this report focuses upon program effectiveness and participant utilization of the training. Specifically, this report presents: (1) project objectives (to train 20 curriculum consultants in the philosophy, methodology, and use of new curricular materials and projects available in elementary science education and to develop: an in-service model for implementation; a role model for the science curriculum consultant; a set of program criteria and recommendations; a change model; and an evaluation model); (2) participant objectives (comparable to program objectives); (3) project activities (three programs providing interaction between participants and specialists and focusing upon costs and logistics, leadership roles, professional response, supervisory techniques, inservice experiences, and evaluation procedures); (4) a formative evaluation plan using models; (5) the follow-up assessment of the workshop (a participant questionnaire, personal testimonies, and graphic representations of program effectiveness; wherein, 59% of the 17 respondents indicated workshop training had been utilized in the classroom and in assisting other educators and the problems encountered centered upon area specific conditions, existing science programs, available materials, and administrative support). (JC)

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RESEARCH AND EVALUATION REPORT SERIES NO. 44

EVALUATION OF LEADERSHIP CONFERENCE IN ELEMENTARY SCIENCE EDUCATION UNIVERSITY OF NEW MEXICO SUMMER 1975

U.S. DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

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MARCH 1976

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INTRODUCTION

A summer program designed to help upgrade science teaching skills in Bureau of Indian Affairs schools throughout the United States was conducted during the summer of 1975 at the University of New Mexico. The National Science Foundation provided a grant of $33,333 to the University of New Mexico for this program. Dr. Paul W. Tweeten, Professor of Secondary Education at the University of New Mexico was the director of this program. Participants in the program were selected with the cooperation of the education specialists of each of the Bureau of Indian Affairs Area Offices. The Bureau of Indian Affairs educators were given instruction in science teaching to help them assume leadership roles in improving the science curriculum and teaching skills in the schools under the jurisdiction of the Bureau of Indian Affairs.

The main purpose of this project was to identify general curriculum consultants in the Bureau of Indian Affairs who have expressed special interests in science education and to train them for leadership roles in science curriculum in their respective areas.

Evaluators

Dr. Eugene Leitka
Education Specialist
Indian Education Resources Center

Mr. Paul Sward
Education Specialist
Indian Education Resources Center

Objectives of the Project

1. To train a group of twenty curriculum consultants in the philosophy, teaching methodology, and materials of the new curricular projects available in elementary science education for the purpose of developing an in-service model for implementation of those materials appropriate to their administrative area.

2. To develop within the twenty participants a role model for the science curriculum consultant.

3. To develop a set of criteria and recommendations for an effective science education program.

4. To develop a model for the most effective means of bringing about change in science education in the participants' administrative area.

5. To develop a model for evaluation of the science program in the participants' administrative area.

The Aims and Objectives of the Participants

1. To gain experience in the philosophy, approach, and operation of the ESS, S-APA, and SCIS materials.

2. To gain further experiences in using these materials with elementary school children.

3. To develop a specific model for working with teachers in an in-service situation for the implementation of the new curricular materials after having become confident and knowledgeable on a personal basis.

4. To develop a set of criteria for an effective science education program in order to better communicate with the local school administrators.

5. To develop a model for bringing about subsequent change in the area assigned.

6. To develop an evaluation model and thus give necessary feedback to the local schools attempting change.

Activities to meet the Objectives

1. The participants as learners and teachers in the activities included the following three programs - S-APA, ESS, and SCIS. The materials for each of these programs were available at the University of New Mexico.

2. Interaction took place between the participants and specialists brought in from the three projects. Interaction was encouraged to broaden the content and framework of each project and to introduce a third important aspect--cost and logistics of ordering, storing, and otherwise administering a new science program that involves a substantial amount of hardware as well as software.

3. Interaction with consultants brought into the sessions on the topics of leadership roles, professional response, and supervisory techniques.

4. Sessions were devoted to trying in-service programs developed by the various projects and from these the participant teams were able to determine, adapt, and adopt the most effective program for their administrative area.

5. Evaluation procedures are necessary in the administrative structure within which the participants must operate. It was, therefore, necessary for the participants to have access during the summer session for various alternative means. The resources available at the University of New Mexico provided for these alternatives as well as contacts with project resource personnel.

College Credits

Each of the participants received up to eight semester hours of credit by successful participation in the program. Credit was given in: Elementary Education 453 - The Science Program in the Elementary School (three credits); Elementary Education 447 - Topics in the Supervision of Elementary School Science Programs (three credits); and Elementary Education 551 - Special Problems (two credits).

The participants received credit for the two three-credit courses, Elementary Education 453 and Elementary Education 447 during the summer phase. The problems course will be a part of the academic year follow-up and also serve as an evaluation tool.

Evaluation Plan

1. Formative Evaluation:

   Major objectives of the project include:

   a. To develop within the twenty participants a role model for the science curriculum consultant.

   b. To develop a set of criteria and recommendations for an effective science education program.

c. To develop a model for the most effective means of bringing about change in science education in the participants administrative area.

d. To develop a model for evaluation of the science program in the participants administrative area.

EVALUATION

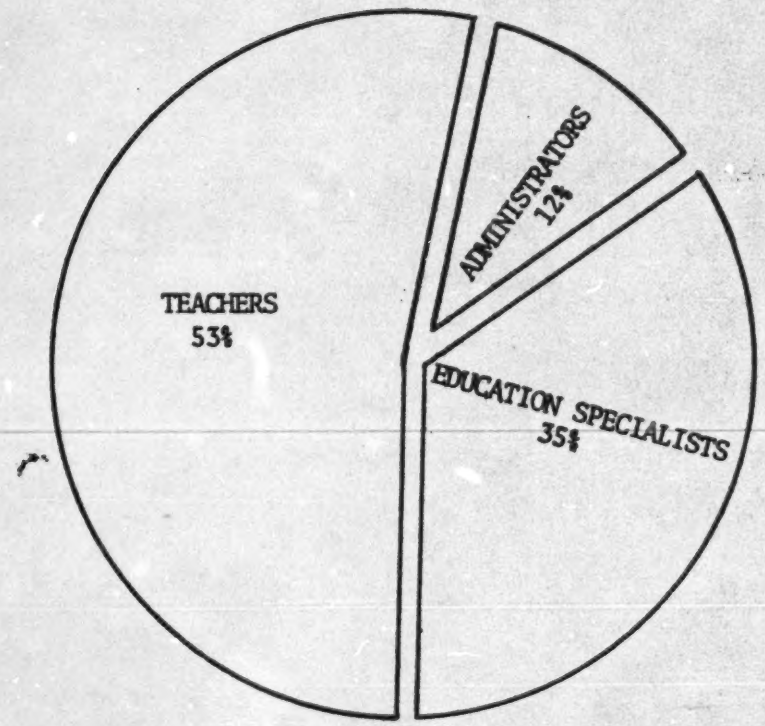
OF

LEADERSHIP CONFERENCE IN ELEMENTARY SCIENCE EDUCATION

UNIVERSITY OF NEW MEXICO

SUMMER 1975

GRAPH NO. 1: Sample Population



FOLLOW-UP ASSESSMENT
LEADERSHIP CONFERENCE IN ELEMENTARY SCIENCE EDUCATION
UNIVERSITY OF NEW MEXICO
SUMMER 1975

This is part of a follow-up activity of the Science Workshop held at the University of New Mexico during the summer of 1975. If you participated in the program, please answer as many of the items below and do not hesitate to add any other information you feel would be necessary and would be important to this follow-up. We are only interested in how effective the program was and how the participants are utilizing the training.

---

1. Please check onethat is appropriate for you.

I am a teacher.	9	53%
I am an administrator.	2	12%
I am an Education Specialist.	6	35%
	17	100%

2. The science training I received at UNM was:

Excellent	12	71%
Good	4	24%
Fair	0	0
Poor	0	0
Good information, but not usable.	0	0
Good information, but I can't apply it in my school.	1	5%
	17	100%

Added comments to Item No. 2:

A. Excellent to the point material brought has successfully been used.

B. Good - other material was used for in-service training but not used in the school.

C. The programs reviewed were suitable for use in our schools. The science activities presented at UNM were organized so that a comparative analysis could be made of the conference material.

D. Introduced most of the Elementary Science Programs.

E. I felt that all areas were covered exceptionally well. The staff and the consultants combined to give us in-depth exposure to all the science projects - yet a certain amount of flexibility was provided for during the workshop which allowed each of us to pursue those special areas of interest and concern that are unique to our own schools.

F. The schools negligence in ordering materials.

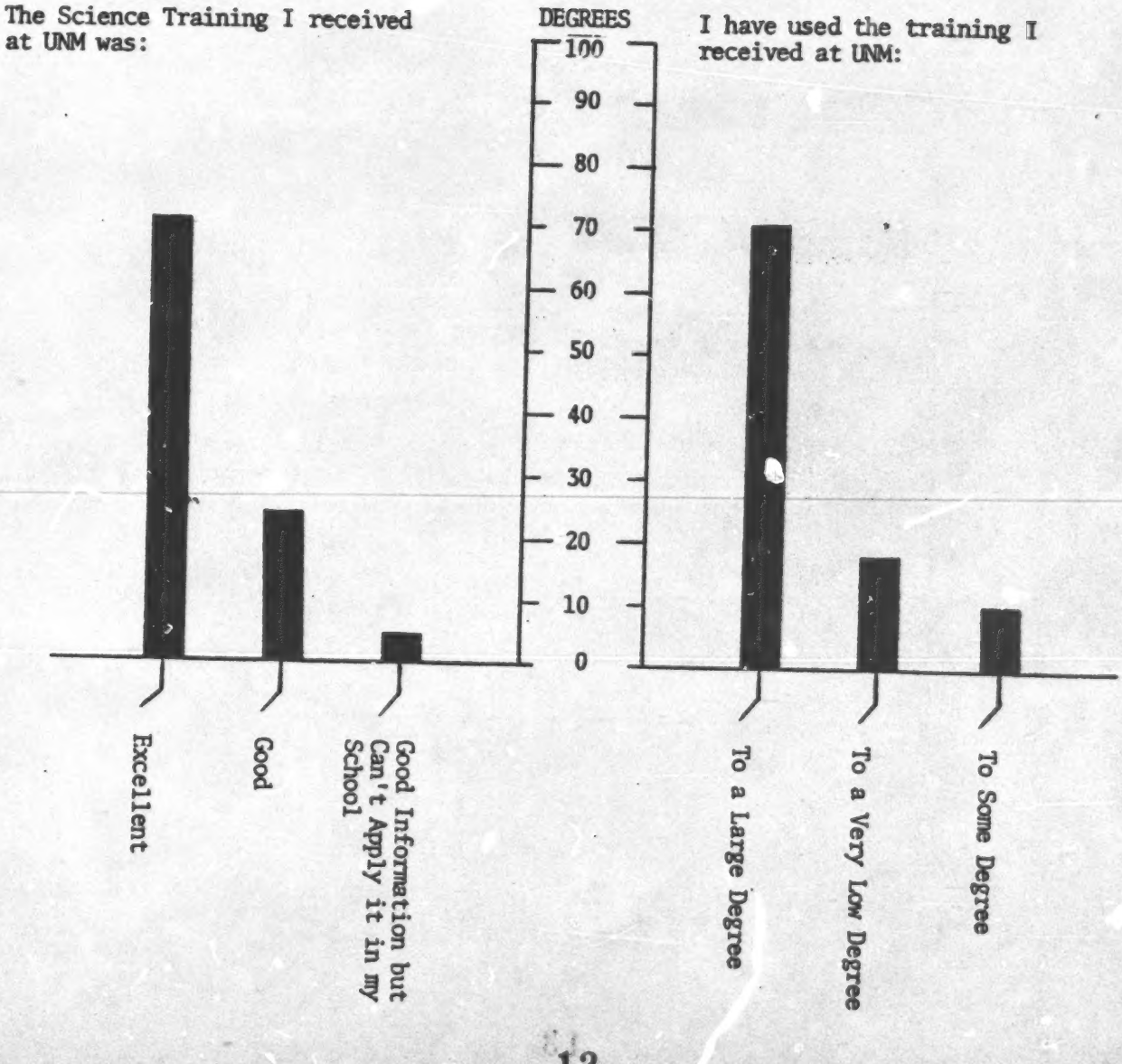
G. Probably not as helpful to me as to others since the material was of a grade school level and I teach in a high school.

H. Supplied needed perspective regarding other science programs.

3. I have used the training I received at UNM:

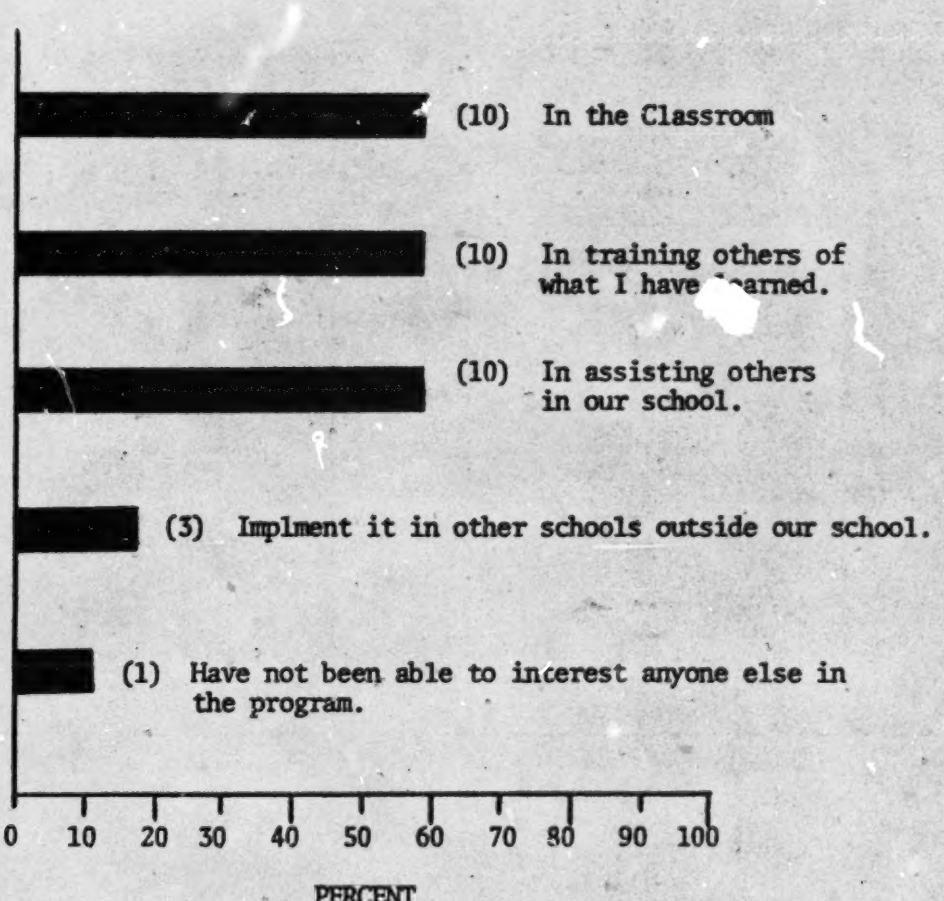
To a large degree	13	76%
To a very low degree	3	18%
To some degree	1	6%
	17	100%

GRAPH NO. 2


The Science Training I received at UNM was:
DEGREES
100
90
80
70
60
50
40
30
20
10
0
Excellent
Good
Good Information but Can't Apply it in my School
I have used the training I received at UNM:
To a Large Degree
To a Very Low Degree
To Some Degree

GRAPH NO. 3

I have been able to use the information I gained:


(10) In the Classroom
(10) In training others of what I have learned.
(10) In assisting others in our school.
(3) Implment it in other schools outside our school.
(1) Have not been able to incerest anyone else in the program.
0 10 20 30 40 50 60 70 80 90 100
PERCENT

4. I have been able to use the information I gained: (Check one or more)

In the classroom	10	59%
In training others of what I learned	10	59%
In assisting others in our school	10	59%
Implement it in other schools outside of our school	3	18%
Have not been able to interest anyone else in the program	1	6%

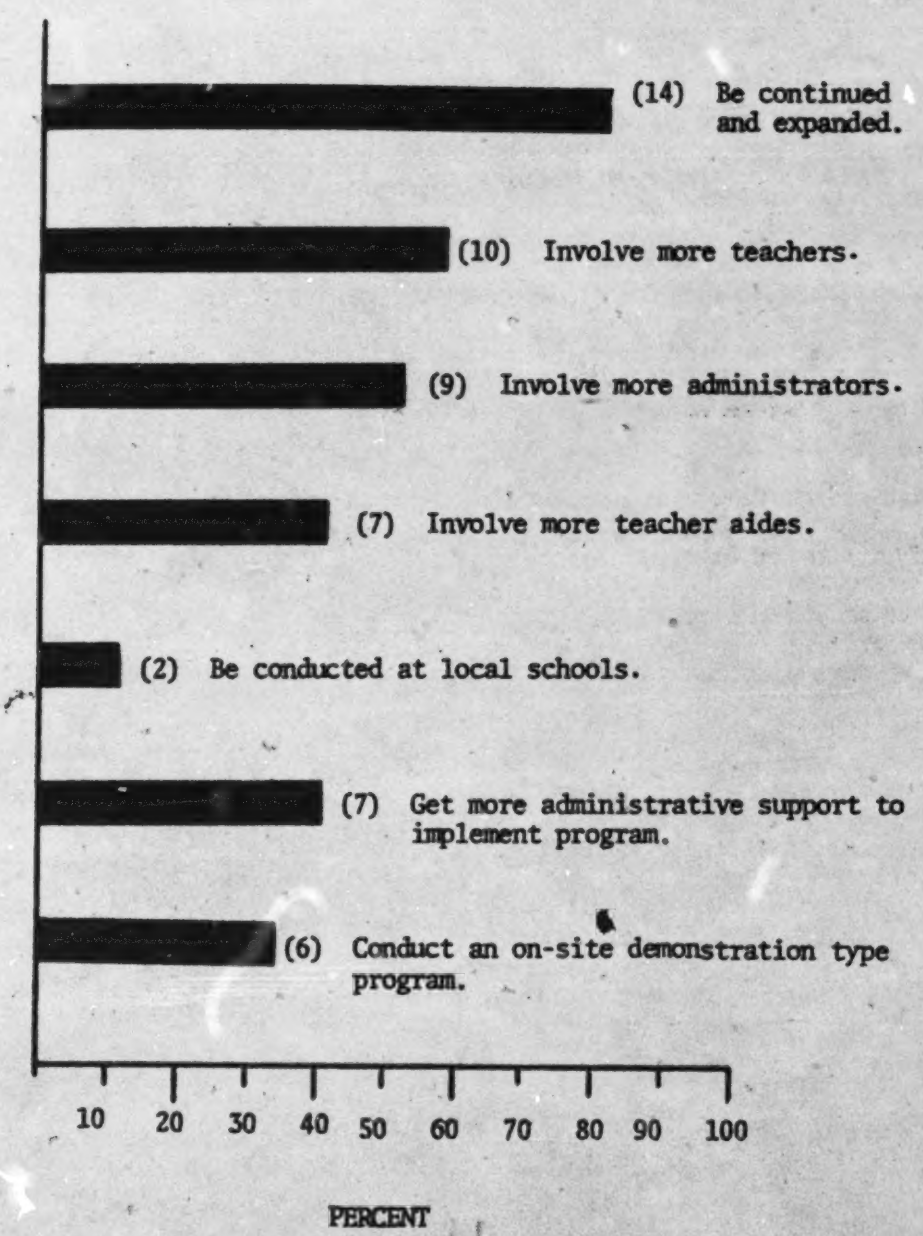
Note: Items 4 and 5 allowed multiple selection thereby distorting the N=17 sample base. However, each of the multiple selections can be treated as a single item. Example: 59% of the 17 respondents felt they were able to use the training in the classroom and 59% of the 17 also felt they had utilized their training other educators and provided assistance to some other school personnel.

5. I think this type of program should: (Check one or more)

Be continued and expanded	14	82%
Involve more teachers	10	59%
Involve more administrators	9	53%
Involve more teacher aides	7	41%
Be conducted at local schools	2	12%
Get more administrative support to implement the program	7	41%
Conduct an on-site "demonstration type program" so that it can be observed and studied by interested Indian educators.	6	35%

GRAPH NO. 5

I think this type of program should:


(14) Be continued and expanded.
(10) Involve more teachers.
(9) Involve more administrators.
(7) Involve more teacher aides.
(2) Be conducted at local schools.
(7) Get more administrative support to implement program.
(6) Conduct an on-site demonstration type program.
10 20 30 40 50 60 70 80 90 100
PERCENT

6. Problems I encountered in my attempts to implement the program at my school:

I had no administrative support.	2	12%
I had no material available to start the program.	3	18%
The school already had a science program and I couldn't change it.	5	29%
No one had any interest in the program.	0	0
I couldn't do it alone.	1	6%
I need assistance from the University.	0	0
Other problems encountered: (See below, Problems Encountered)	6	35%
	17	100%

For Item No. 6, a great number of the participants had encountered a variety of problems in their attempts to implement any new ideas they acquired at the Science Training Conference. However, it appears that most of the schools, from which the participants came, already had established science programs. Participants from the Aberdeen Area appear to have more impact in training other teachers in the Area schools.

Problems Encountered: (Part of Item No. 6)

A. Already an Area Committee established. Extremely difficult to interest them in the information I had gained from this past summer's experience.

B. Teachers are pretty eager to try new approaches to teaching science but we seem to have no money to buy a good activity oriented program.

C. We did not inventory our kits until December 1975 and found some kits were totally without material. We ordered $900 for SCIS, January 1976.

D. The organization and time factor once school started would not permit a change nor an additional training program such as "Science Inquiry" but does appear promising in the summer of 1976.

E. In the Federal (BIA) Pine Ridge School System the program was implemented in one K-8 school, particularly into one K-12 school in grades 7 and 8, and in grades 4, 5, and 6 in another K-8 day school. Following the workshop and return to duty at Pine Ridge the participants from Pine Ridge, Joe Mooney, Kerry Bryan and Barbara Carson held one day workshops at five locations. We trained seventy-nine teachers and administrators in the activity-oriented science approach.

F. Administrative interest seemed to be quite low - also material availability was of some concern.

G. Although the school already was involved in implementing a Science program, I felt the training was effective in that it helped me to diagnose areas of weaknesses in the present program, which enabled us to find suitable supplementar materials to strengthen the present program. The reason I checked the "involve more administrators" was that the ultimate decision as to what type of program is selected generally rests with the administrators. I feel that sometimes, therefore, the most effective program for an administrative area is overlooked simply because "evaluation techniques" used by teachers and by administrators vary to a certain degree. As a teacher, I did feel somewhat ineffective as far as evaluating a program from an administrative point of view and yet if one of my administrators had been there in "conjunction with a resource person" the combined

effort would have been more complete during the development of a science curriculum for our particular area.

H. Shortage of staff - we developed the programs we already had. Most schools have SCIS - so the training was done in that area. Although my involvement in the program was not as a participant, but as a member of the staff conducting the conference, I appreciate being kept on your mailing list. This enables me to keep current with your activities regarding BIA teacher training programs. I would like to take this opportunity to offer my services to the BIA for the purpose of conducting a similar training session in this state (Oklahoma).

I. Lack of time.

J. Dr. Paul Tweeten, College of Education, University of New Mexico, had organized the program with great care and thought. We were presented with a great variety of different activity oriented science programs and had an actual participating chance to see how they worked. I would like to see another such program for secondary (7-12) levels. This would tie K-12 science together in a continuous productive thought stimulating educational program.

K. We are finding planning and time is a crucial area. Also, we feel many other science programs beside SCIS should be available. Teachers within the San Juan Day School have been trained and understand the program, but our biggest set back was inventory.

Additional Comments:

A. Three of us from the Pine Ridge Reservation gave workshops to all the schools. I have been busy implementing it in my school. We had Concepts In Science as all of the day schools have. At first I ordered the STEM teachers guides and they go along with Concepts In Science beautifully. I was able to get the kits and everything is going great. I did not teach science before so the help from the workshop was great. I have been busy with my own so I don't know how many of the day schools are using what we tried to tell them. I do know that the Pine Ridge Elementary School was greatly impressed and they had materials to work with and are using it. I teach a self-contained classroom and do not have an aide. The children are great and love to help take care of the material. I tell them that if 95 students have to use the material, we can't lose it unless they want to go back to the text book. The cooperate and say they prefer the inquiry-hands-on-activity-oriented method. The state of South Dakota is pushing this method.

B. I would suggest this be put on in Areas for one week right before or after the start of the academic year, as most teachers are available at that time. Participants should be teachers and aides in science plus an administrator.

C. I think that in reviewing the program those at the Indian Resource Center who were responsible for supplying the impetus for such a program should be commended for their efforts. I believe that the

entire program reflected your concern for developing quality science education. This type of concern can generate only positive results and attitudes among those of us at the "grassroots" level. Also, a word of commendation for Dr. Paul Tweeten. I believe that when Dr. Tweeten completes his final evaluation of the program, he can be very well pleased with his efforts and those of his staff. He need only to look at the designated objectives which he set up at the beginning of the program - the great majority of these objectives have already been realized. Very few men would have been able to "get it all together" as he did. A superlative effort - a rewarding workshop.

D. The schools using the materials are well pleased. The schools not using the program have been urged to purchase the materials and start using them as soon as possible. No schools have expressed their dislike for SCIS - quite the opposite.

E. The project met all the objectives of the proposal. I was pleased with my participation, would, however, like to have more follow-up from the University or Indian Education Resources Center.

F. During the summer, I made plans to implement the ideas of several of the commercial programs. I used a learning station approach and modeled the planning and activities for the kindergarten programs at SPA. I think the same training program would be good for teachers and aides as they would be the ones actually implementing a science program.

G. Have a morning session and an afternoon session, thus cutting the time from six to three weeks.

H. I came about with a request from another member of the SCIS team to aid in SCIS--she recommended a complete inventory. The NPA in-service training for all teachers has not been implemented as yet. It is scheduled for March.

I. Having participated in two other NSF institutes (64 and 70), the UNM summer 1975 was the most delightful and educational I have experienced. The instructional staff and format was near being perfect and the inspiration I received will never fail me nor the BIA will never be permitted to forget there is a better approach to (teaching) elementary science.

J. I found the preview of several programs enabled me to more honestly assess advantages and disadvantages of several programs. I have been using the SCIS Program somewhat but following the guidelines of the COPES (the kindergarten does not have the SCIS materials yet). I would like to see a similar workshop but one that goes into more depth.

K. The program last summer was excellent but it was primarily introducing the different science programs available to schools. Now that we are using SCIS program, I would like to see a workshop going into this program very thoroughly.